ecology and environment, inc.
Global Environmental Specialists
720 Third Avenue, Suite 1700
Seattle, Washington 98104
Tel: (206) 624-9537, Fax: (206) 621-9832

MEMORANDUM

DATE: August 6, 2012

TO: Steve Hall, START-3 Project Manager, E & E, Seattle, WA

FROM: Mark Woodke, START-3 Chemist, E & E, Seattle, Washington

SUBJ: **Organic Data Quality Assurance Review, Avery Landing Site, Avery, Idaho**

COC: 12-05-0006-22

REF:

TDDs: 12-05-0006	PANs: 002233.0790.01RA
12-05-0007	PANs: 002233.0791.01RA
12-05-0008	PANs: 002233.0792.01RA
12-05-0009	PANs: 002233.0793.01RA

The data quality assurance review of two soil samples collected from the Avery Landing Site (consisting of the Avery Bentcik, Avery IDOL, Avery FHWA, and Avery Potlatch sites) located in Avery, Idaho, has been completed. Selected Semivolatile Organic Compound (SVOC) analysis (EPA Method 8270D) was performed by GEL Labs, Inc., Charleston, South Carolina. All sample analyses were evaluated following EPA's Stage 2 Data Validation Manual Process (S2VM) and/or Stage 4 Data Validation Manual Process (S4VM).

The samples were numbered: 12060076 12060077

Data Qualifications:

1. Sample Holding Times: Acceptable.

The samples were maintained and received within the QC limits of < 6°C. The samples were collected on July 21, 2012, were extracted on July 24, 2012, and were analyzed on July 25, 2012, therefore meeting holding time criteria of less than 7 days between collection and extraction (14 days for soil) and less than 40 days between extraction and analysis.

2. Tuning: Acceptable.

Tuning was performed at the beginning of each 12-hour analysis sequence. All results were within QC limits.

3. Initial Calibration: Acceptable.

All average Relative Response Factors (RRFs) were within the QC limits. All Relative Standard Deviations (RSDs) were within the QC limits.

4. Continuing Calibration: Satisfactory.

All RRFs were within the QC limits. All % differences were within the QC limits except indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene, and benzo(g,h,i) perylene with high recoveries in the 7-25 calibration and hexachlorocyclopentadiene and pentachlorophenol with low recoveries in the 7-26 calibration. Positive sample results associated with the high recovery outliers were qualified as estimated quantities with a high bias (JH). Positive results and sample quantitation limits associated with the low recovery outliers were qualified as estimated quantities with a low bias (JL and UJL, respectively).

5. Blanks: Acceptable.

A method blank was analyzed for each 20 sample batch per matrix. There were no detections in any method blank.

6. System Monitoring Compounds (SMCs): Acceptable.

All SMC recoveries were within QC limits.

7. Matrix Spike (MS)/MS Duplicate (MSD)/Blank Spike (BS) Analysis: Satisfactory.

All spike analyses were performed per SDG or per matrix per concentration level, whichever was more frequent. All recoveries were within the QC limits except pentachlorophenol with a low recovery in the BS (associated positive results and sample quantitation limits were qualified as estimated quantities with a low bias [JL and UJL, respectively]).

8. Duplicate Analysis: Satisfactory.

Spike duplicate analysis was performed per SDG or per matrix per concentration level, whichever was more frequent. All spike duplicate results were within QC limits except pyrene. No action was taken based on this outlier as the associated spike results were within QC limits.

9. Internal Standards: Acceptable.

All internal standards (IS) were within $\pm$ 30 seconds of the continuing calibration IS retention times. All area counts were within 50 % to 200 % of the continuing calibration area counts.

10. Precision and Bias Determination: Not Performed.

Samples necessary to determine precision and bias were not provided to the laboratory. All results were flagged "PND" (Precision Not Determined) and "RND" (Recovery Not Determined), although the flags do not appear on the data sheets.

11. Performance Evaluation Sample Analysis: Not Provided.

Performance evaluation samples were not provided to the laboratory.

12. Overall Assessment of Data for Use

The reviewer used professional judgment to apply a single bias qualifier when more than one bias qualifier was applicable to an individual estimated sample result.

The overall usefulness of the data is based on the criteria outlined in the Site-Specific Sampling Plan, the OSWER Guidance Document "Quality Assurance/Quality Control Guidance for Removal Activities, Sampling QA/QC Plan, and Data Validation Procedures" (EPA/540/G-90/004), the analytical

method, and, when applicable, the Office of Emergency and Remedial Response Publication "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Based upon the information provided, the data are acceptable for use with the above stated data qualifications.

Data Qualifiers and Definitions

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

JH - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with a high bias.

JL - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with a low bias.

JK - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with an unknown direction of bias.

JQ – The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with an unknown direction of bias and falls between the MDL and the Minimum (or Practical) Quantitation Limit (MQL, PQL).

N - The analysis indicates the present of an analyte for which there is presumptive evidence to make a "tentative identification".

NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Company : Ecology and Environment, Inc.
Address : 720 Third Ave
Suite 1700
Seattle, Washington 98104
Contact: Mr. Steve Hall
Project: **Project No. 4500000347**

Report Date: July 27, 2012

Client Sample ID: 12060076
Sample ID: 308397001
Matrix: Soil
Collect Date: 21-JUL-12 09:00
Receive Date: 24-JUL-12
Collector: Client
Moisture: 23.2%

Project: ECOL00801
Client ID: ECOL008

Parameter	Qualifier	Result	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatile-GC/MS										
SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"										
1,1'-Biphenyl	U	ND	433	ug/kg	1	JLD1	07/25/12	1712	1232292	1
1,2,4,5-Tetrachlorobenzene	U	ND	433	ug/kg	1					
1-Methylnaphthalene	U	ND	43.3	ug/kg	1					
2,3,4,6-Tetrachlorophenol	U	ND	433	ug/kg	1					
2,4,5-Trichlorophenol	U	ND	433	ug/kg	1					
2,4,6-Trichlorophenol	U	ND	433	ug/kg	1					
2,4-Dichlorophenol	U	ND	433	ug/kg	1					
2,4-Dimethylphenol	U	ND	433	ug/kg	1					
2,4-Dinitrophenol	U	ND	866	ug/kg	1					
2,4-Dinitrotoluene	U	ND	433	ug/kg	1					
2,6-Dinitrotoluene	U	ND	433	ug/kg	1					
2-Chloronaphthalene	U	ND	43.3	ug/kg	1					
2-Chlorophenol	U	ND	433	ug/kg	1					
2-Methyl-4,6-dinitrophenol	U	ND	433	ug/kg	1					
2-Methylnaphthalene	U	ND	43.3	ug/kg	1					
2-Nitrophenol	U	ND	433	ug/kg	1					
3,3'-Dichlorobenzidine	U	ND	433	ug/kg	1					
4-Bromophenylphenylether	U	ND	433	ug/kg	1					
4-Chloro-3-methylphenol	U	ND	433	ug/kg	1					
4-Chloroaniline	U	ND	433	ug/kg	1					
4-Chlorophenylphenylether	U	ND	433	ug/kg	1					
4-Nitrophenol	U	ND	433	ug/kg	1					
Acenaphthene	U	ND	43.3	ug/kg	1					
Acenaphthylene	U	ND	43.3	ug/kg	1					
Acetophenone	U	ND	433	ug/kg	1					
Anthracene	U	ND	43.3	ug/kg	1					
Atrazine	U	ND	433	ug/kg	1					
Benzaldehyde	U	ND	433	ug/kg	1					
Benzo(a)anthracene		402	43.3	ug/kg	1					
Benzo(a)pyrene	U	ND	43.3	ug/kg	1					
Benzo(b)fluoranthene	U	ND	43.3	ug/kg	1					
Benzo(ghi)perylene		126	43.3	ug/kg	1					
Benzo(k)fluoranthene	U	ND	43.3	ug/kg	1					
Butylbenzylphthalate	U	ND	433	ug/kg	1					
Caprolactam	U	ND	433	ug/kg	1					
Carbazole	U	ND	43.3	ug/kg	1					
Chrysene		629	43.3	ug/kg	1					

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Report Date: July 27, 2012

Client Sample ID: 12060076
Sample ID: 308397001

Project: ECOL00801
Client ID: ECOL008

Parameter	Qualifier	Result	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatile-GC/MS										
SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"										
Di-n-butylphthalate	U	ND	433	ug/kg	1					
Di-n-octylphthalate	U	ND	433	ug/kg	1					
Dibenzo(a,h)anthracene	U	ND	43.3	ug/kg	1					
Dibenzofuran	U	ND	433	ug/kg	1					
Diethylphthalate	U	ND	433	ug/kg	1					
Dimethylphthalate	U	ND	433	ug/kg	1					
Diphenylamine	U	ND	433	ug/kg	1					
Fluoranthene	U	ND	43.3	ug/kg	1					
Fluorene	U	ND	43.3	ug/kg	1					
Hexachlorobenzene	U	ND	433	ug/kg	1					
Hexachlorobutadiene	U	ND	433	ug/kg	1					
Hexachlorocyclopentadiene	U	ND	433	ug/kg	1					
Hexachloroethane	U	ND	433	ug/kg	1					
Indeno(1,2,3-cd)pyrene	U	ND	43.3	ug/kg	1					
Isophorone	U	ND	433	ug/kg	1					
N-Nitrosodipropylamine	U	ND	433	ug/kg	1					
Naphthalene	U	ND	43.3	ug/kg	1					
Nitrobenzene	U	ND	433	ug/kg	1					
Pentachlorophenol	U	ND	433	ug/kg	1					
Phenanthrene		2940	43.3	ug/kg	1					
Phenol	U	ND	433	ug/kg	1					
Pyrene		2660	43.3	ug/kg	1					
bis(2-Chloroethoxy)methane	U	ND	433	ug/kg	1					
bis(2-Chloroethyl) ether	U	ND	433	ug/kg	1					
bis(2-Chloroisopropyl)ether	U	ND	433	ug/kg	1					
bis(2-Ethylhexyl)phthalate	U	ND	433	ug/kg	1					
m,p-Cresols	U	ND	433	ug/kg	1					
m-Nitroaniline	U	ND	433	ug/kg	1					
o-Cresol	U	ND	433	ug/kg	1					
o-Nitroaniline	U	ND	433	ug/kg	1					
p-Nitroaniline	U	ND	433	ug/kg	1					

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3550C	3550C BNA Soil Prep for 8270D	MXS4	07/24/12	1915	1232290

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 3550C/8270D	

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Contact: Mr. Steve Hall
Project: **Project No. 4500000347**

Report Date: July 27, 2012

Client Sample ID: 12060076
Sample ID: 308397001

Project: ECOL00801
Client ID: ECOL008

Parameter	Qualifier	Result	RL	Units	DF	Analyst	Date	Time	Batch	Method
Surrogate/Tracer recovery	**Test**			**Result**	**Nominal**	**Recovery%**	**Acceptable Limits**			
2-Fluorobiphenyl	SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"			1010 ug/kg	2160	46.9	(24%-106%)			
Nitrobenzene-d5	SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"			1120 ug/kg	2160	51.9	(22%-124%)			
p-Terphenyl-d14	SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"			1880 ug/kg	2160	86.9	(24%-137%)			
2,4,6-Tribromophenol	SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"			2160 ug/kg	4330	49.8	(23%-124%)			
2-Fluorophenol	SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"			1890 ug/kg	4330	43.7	(27%-112%)			
Phenol-d5	SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"			1720 ug/kg	4330	39.8	(26%-112%)			

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Contact: Mr. Steve Hall
Project: **Project No. 4500000347**

Report Date: July 27, 2012

Client Sample ID: 12060077
Sample ID: 308397002
Matrix: Soil
Collect Date: 21-JUL-12 09:15
Receive Date: 24-JUL-12
Collector: Client
Moisture: 23.9%

Project: ECOL00801
Client ID: ECOL008

Parameter	Qualifier	Result	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatile-GC/MS										
SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"										
1,1'-Biphenyl	U	ND	438	ug/kg	1	JLD1	07/25/12	1737	1232292	1
1,2,4,5-Tetrachlorobenzene	U	ND	438	ug/kg	1					
1-Methylnaphthalene	U	ND	43.8	ug/kg	1					
2,3,4,6-Tetrachlorophenol	U	ND	438	ug/kg	1					
2,4,5-Trichlorophenol	U	ND	438	ug/kg	1					
2,4,6-Trichlorophenol	U	ND	438	ug/kg	1					
2,4-Dichlorophenol	U	ND	438	ug/kg	1					
2,4-Dimethylphenol	U	ND	438	ug/kg	1					
2,4-Dinitrophenol	U	ND	875	ug/kg	1					
2,4-Dinitrotoluene	U	ND	438	ug/kg	1					
2,6-Dinitrotoluene	U	ND	438	ug/kg	1					
2-Chloronaphthalene	U	ND	43.8	ug/kg	1					
2-Chlorophenol	U	ND	438	ug/kg	1					
2-Methyl-4,6-dinitrophenol	U	ND	438	ug/kg	1					
2-Methylnaphthalene	U	ND	43.8	ug/kg	1					
2-Nitrophenol	U	ND	438	ug/kg	1					
3,3'-Dichlorobenzidine	U	ND	438	ug/kg	1					
4-Bromophenylphenylether	U	ND	438	ug/kg	1					
4-Chloro-3-methylphenol	U	ND	438	ug/kg	1					
4-Chloroaniline	U	ND	438	ug/kg	1					
4-Chlorophenylphenylether	U	ND	438	ug/kg	1					
4-Nitrophenol	U	ND	438	ug/kg	1					
Acenaphthene	U	ND	43.8	ug/kg	1					
Acenaphthylene	U	ND	43.8	ug/kg	1					
Acetophenone	U	ND	438	ug/kg	1					
Anthracene	U	ND	43.8	ug/kg	1					
Atrazine	U	ND	438	ug/kg	1					
Benzaldehyde	U	ND	438	ug/kg	1					
Benzo(a)anthracene		251	43.8	ug/kg	1					
Benzo(a)pyrene	U	ND	43.8	ug/kg	1					
Benzo(b)fluoranthene	U	ND	43.8	ug/kg	1					
Benzo(ghi)perylene	U	ND	43.8	ug/kg	1					
Benzo(k)fluoranthene	U	ND	43.8	ug/kg	1					
Butylbenzylphthalate	U	ND	438	ug/kg	1					
Caprolactam	U	ND	438	ug/kg	1					
Carbazole	U	ND	43.8	ug/kg	1					
Chrysene		384	43.8	ug/kg	1					

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Sample ID: 308397002

Project: ECOL00801
Client ID: ECOL008

Parameter	Qualifier	Result	RL	Units	DF	Analyst	Date	Time	Batch	Method
Semi-Volatile-GC/MS										
SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"										
Di-n-butylphthalate	U	ND	438	ug/kg	1					
Di-n-octylphthalate	U	ND	438	ug/kg	1					
Dibenzo(a,h)anthracene	U	ND	43.8	ug/kg	1					
Dibenzofuran	U	ND	438	ug/kg	1					
Diethylphthalate	U	ND	438	ug/kg	1					
Dimethylphthalate	U	ND	438	ug/kg	1					
Diphenylamine	U	ND	438	ug/kg	1					
Fluoranthene	U	ND	43.8	ug/kg	1					
Fluorene	U	ND	43.8	ug/kg	1					
Hexachlorobenzene	U	ND	438	ug/kg	1					
Hexachlorobutadiene	U	ND	438	ug/kg	1					
Hexachlorocyclopentadiene	U	ND	438	ug/kg	1					
Hexachloroethane	U	ND	438	ug/kg	1					
Indeno(1,2,3-cd)pyrene	U	ND	43.8	ug/kg	1					
Isophorone	U	ND	438	ug/kg	1					
N-Nitrosodipropylamine	U	ND	438	ug/kg	1					
Naphthalene	U	ND	43.8	ug/kg	1					
Nitrobenzene	U	ND	438	ug/kg	1					
Pentachlorophenol	U	ND	438	ug/kg	1					
Phenanthrene		1880	43.8	ug/kg	1					
Phenol	U	ND	438	ug/kg	1					
Pyrene		1110	43.8	ug/kg	1					
bis(2-Chloroethoxy)methane	U	ND	438	ug/kg	1					
bis(2-Chloroethyl) ether	U	ND	438	ug/kg	1					
bis(2-Chloroisopropyl)ether	U	ND	438	ug/kg	1					
bis(2-Ethylhexyl)phthalate	U	ND	438	ug/kg	1					
m,p-Cresols	U	ND	438	ug/kg	1					
m-Nitroaniline	U	ND	438	ug/kg	1					
o-Cresol	U	ND	438	ug/kg	1					
o-Nitroaniline	U	ND	438	ug/kg	1					
p-Nitroaniline	U	ND	438	ug/kg	1					

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3550C	3550C BNA Soil Prep for 8270D	MXS4	07/24/12	1915	1232290

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 3550C/8270D	

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Report Date: July 27, 2012

Client Sample ID: 12060077
Sample ID: 308397002

Project: ECOL00801
Client ID: ECOL008

Parameter	Qualifier	Result	RL	Units	DF	Analyst	Date	Time	Batch	Method

Surrogate/Tracer recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
2-Fluorobiphenyl	SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"	916 ug/kg	2190	41.9	(24%-106%)
Nitrobenzene-d5	SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"	950 ug/kg	2190	43.4	(22%-124%)
p-Terphenyl-d14	SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"	1360 ug/kg	2190	62.2	(24%-137%)
2,4,6-Tribromophenol	SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"	1790 ug/kg	4380	40.9	(23%-124%)
2-Fluorophenol	SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"	1490 ug/kg	4380	34.1	(27%-112%)
Phenol-d5	SW846 3550C/8270D Semivolatile Analysis "Dry Weight Corrected"	1380 ug/kg	4380	31.6	(26%-112%)